

Notice of Allowability

Application No.

09/815,329

Examiner

Brian L. Mutschler

Applicant(s)

INABA ET AL.

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 23 April 2004.
2. ☒ The allowed claim(s) is/are 16-59.
3. ☒ The drawings filed on 23 April 2004 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 20040610.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Ms. Megan Sunkel on June 10, 2004.

The application has been amended as follows:

In the claims:

- a. In claim 16 at line 14, please insert the phrase --, and the laser beam propagates successively to adjacent capillaries-- after the word "portion".
- b. In claim 25 at line 13, please insert the phrase --, and the laser beam propagates successively to adjacent capillaries-- after the word "portion".
- c. In claim 33 at line 14, please insert the phrase --, and the laser beams propagate successively to adjacent capillaries-- after the word "portion".
- d. In claim 47 at line 13, please insert the phrase --, and the laser beams propagate successively to adjacent capillaries-- after the word "portion".

2. The following is an examiner's statement of reasons for allowance:

The instant invention is distinguished over the prior art of record by providing a capillary array electrophoresis apparatus comprising a laser oscillator which irradiates a

Art Unit: 1753

laser beam across a detection region formed by parallel parts in a plurality of capillaries, wherein the laser is incident on the outermost capillary in an inclined manner such that the optical path of a reflected laser beam differs from the incident laser beam optical path, and the laser beam propagates successively to adjacent capillaries. The prior art of record neither teaches nor suggests the combination of limitations recited in the instant claims.

In U.S. Pat. No. 6,358,387, Kopf-Sill et al. teach the use of a laser beam incident on a plurality of capillaries at an incline with respect to the plane formed by the array of capillaries to avoid zero-order reflections. However, the laser beam is incident on each of the capillaries simultaneously so that the laser beam does not propagate to adjacent capillaries.

Successive propagation through capillaries is a known alternative to simultaneous irradiation and has been taught in U.S. Pat. Nos. 5,567,294 (Dovich et al.); 5,582,705 (Yeung et al.); 5,790,727 (Dhadwal et al.); 5,833,827 (Anazawa et al.); and 5,938,908 (Anazawa et al.). Although successive propagation is a known method of irradiating a plurality of capillaries, the prior art systems neither teach nor suggest irradiating the laser beam in an inclined manner so that the optical path of the incident laser beam differs from the optical path of the reflected laser beam. Each of the prior art systems teaches the use of laser beams that are incident normal to the surface of the outermost capillary. This arrangement is used to minimize the deviation of the laser beam as it passes through the capillary array. As clearly shown in Figure 2 of U.S. Pat. No. 5,833,827, each capillary acts as a lens that provides four interface changes that

Art Unit: 1753

alter the path of the incident laser beam. This refraction can significantly affect the irradiation that reaches the innermost capillaries and consequently determines the detection efficiency of the system. Therefore, the prior art devices teach the use of laser beams that are coplanar to the capillary array.

Thus, it would not have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the systems of the prior art to use a combination of an inclined laser beam and successive propagation of the laser beam through adjacent capillaries.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian L. Mutschler whose telephone number is (571) 272-1341. The examiner can normally be reached on Monday-Friday from 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BLM
June 10, 2004



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SUPERVISORY PATENT EXAMINER
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